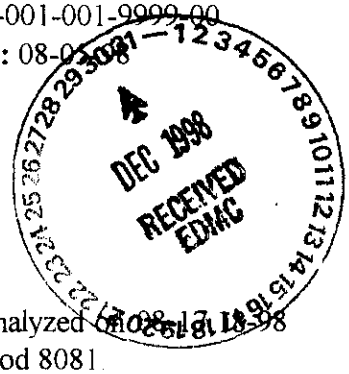
RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B98-063
RFW# : 9808L205
SDG/SAF: H0186/B98-063

W.O.# : 10985-001-001-9999-00
Date Received : 08-03-98



PCB

One (1) water sample was collected on 08-03-98.

The sample and its associated QC samples were extracted on 08-07-98 and analyzed on 08-17-98 according to Recra OPs based on SW846, 3rd Edition, Method 3520 and Method 8081.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The required holding time for extraction was not met because samples were received in the Lionville laboratory outside of extraction holding time; however, all analysis holding time were met.

3. The sample and its associated QC samples received a sulfuric acid and sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

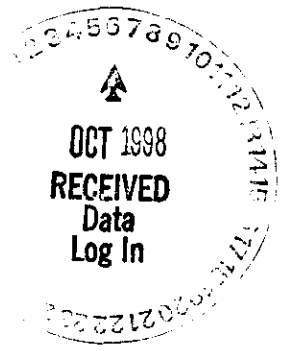
5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

8. All initial calibrations associated with this data set were within acceptance criteria.

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.



Chuck Stefanosky
Laboratory Director
Lionville Analytical Laboratory

09-03-98
Date

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208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 08/18/98 11:41

RFW Batch Number: **9808L205** Client: **TNU-HANFORD B98-0063** Work Order: 10985001001 Page: 1

004

	Cust ID:	BONCD1	BONCD1	BONCD1	PBLKMI	PBLKMI BS
Sample Information	RFW#:	001	001 MS	001 MSD	98LE1322-MB1	98LE1322-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate: Tetrachloro-m-xylene		62 %	52 %	52 %	40 %	55 %
Decachlorobiphenyl		76 %	93 %	84 %	86 %	103 %
Aroclor-1016		1.0 U	2.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1221		2.0 U	4.0 U	4.0 U	2.0 U	2.0 U
Aroclor-1232		1.0 U	2.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	2.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	2.0 U	2.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	104 %	100 %	1.0 U	109 %
Aroclor-1260		1.0 U	2.0 U	2.0 U	1.0 U	1.0 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-0063

DATE RECEIVED: 08/05/98 RFW LOT # :9808L205

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BONCD1	001	W	98LE1322	08/03/98	08/07/98	08/18/98
BONCD1	001 MS	W	98LE1322	08/03/98	08/07/98	08/18/98
BONCD1	001 MSD	W	98LE1322	08/03/98	08/07/98	08/18/98
LAB QC:						
PBLKMI	MB1	W	98LE1322	N/A	08/07/98	08/17/98
PBLKMI	MB1 BS	W	98LE1322	N/A	08/07/98	08/17/98

DC
9/2/98

9808205

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU-Hanford B98-063

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-02

Project Contact/Phone #

RECRA Project Manager MS

QC SPEC Del STD TAT ~~21 day~~ 15 day

Date Rec'd 8/5/98 Date Due ~~8/26/98~~ 8/20/98

Account #

Refrigerator #		3		3	
#/Type Container	Liquid	4		1p	
	Solid	2g			
Volume	Liquid	1 Ltr		500	
	Solid				
Preservatives				HNO3	

ANALYSES REQUESTED

ORGANIC: VOA | BNA | Pest/PCB | Herb

INORG: Metal | CN

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only: OPCB	ICR6	METO
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	BONCD1			W	8/3/98	1610	✓	X	✓

Special Instructions:

SAF# B98-063

RSA - Client info

RMSC - Comp

DATE/REVISIONS:

1 MET ① = Pb, Hg (Pb by mace)

2 ICR6 On hold.

8/6/98 3 Chromium Hex Cancelled per PM

4 Rem Matrix QC

8/26/98 5 TAT corrected

6 * 423579515429

RECRA LabNet Use Only

Samples were 1) Shipped ✓ or Hand Delivered

Airbill # *

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Time Y or N

COC Tape was 1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec'd Y or N

Cooler Temp 5.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: Cr6 not rec'd

Relinquished by	Received by	Date	Time
Dedeu	Fedex	8/5/98	0920

Relinquished by	Received by	Date	Time

Collector Lahlberg Nielson	**Company Contact** Steve Marske	**Telephone No.** 373-4316	**Project Coordinator** WEISS, RL
Project Designation 105-C Phase I & Phase II - Water Samples	**Sampling Location** 105-C		**SAF No.** B98-063
Ice Chest No.	**Field Logbook No.** HL-1309-1		**Method of Shipment** Federal Express
Shipped To ~~Chemtech Incorporated~~ RUN REERA LabNet 7/1/98	**Offsite Property No.**		**Bill of Lading/Air Bill No.**
Waste Designation			**COA**

Data Turnaround
21 Days

100

POSSIBLE SAMPLE HAZARDS/REMARKS

4235 7951 5429 5.1

Special Handling and/or Storage
Cool 4C

Preservation	None	HNO3 to pH 2	Cool 4C	HNO3 to pH 2	HNO3 to pH 2	HNO3 to pH 2	Cool 4C	HNO3 to pH 2	HNO3 to pH 2	HNO3 to pH 2
Type of Container	P	aG	P	P	P	P	aG	P	P	P
No. of Container(s)	1	1	1	1	1	1	2	2	2	3
Volume	20ml	500ml	500ml	500ml	1000ml	1000ml	1000ml	1000ml	1000ml	500ml

SAMPLE ANALYSIS

Sample No	Matrix *	Sample Date	Sample Time	Activity Scan	Mercury 7470 - (CV)	Chromium Hex - 7196	ICP Metals 6010A (Supertrace) (Lead)	See item (2) on Special Instructions	Sr-90 Fe-55	PCBs - 8080 (Aroclor 1254)	See item (2) on Special Instructions	Isotopic Plutonium Isotopic Uranium Americium-241	Selenium-79
B0NCD1	Water	8-3-98	1610		X	X	X			X			

CHAIN OF POSSESSION

	Sign/Print Names	Date Time
Relinquished By	[illegible]	1310
Received By	FedEx	
Relinquished By		
Received By		
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)
(2) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Do not run Chromium-Hex 7196 unless directed by EEC Sample management.

Matrix *

S	Soil
SE	Sediment
SO	Solid
SL	Sludge
W	Water
O	Oil
A	Air
DS	Drum Solids
DL	Drum Liquids
T	Tissue
WI	Wipe
L	Liquid
V	Vegetation
X	Other

LABORATORY SECTION	Received By	Title	Date Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date Time

170105-110

Thermo Nutech
W.O. No. N8-08-012-7486, SDG H0186

Bechtel Hanford Inc.
P.O. TRB-SBB-207925

Case Narrative

1.0 GENERAL

Thermo Nutech Sample Delivery Group H0186 is comprised of a single water sample designated under SAF No. B98-063 with a Project Designation of : 105-C Phase I & II - Water Samples.

The sample was received as stated on the Chain-of-Custody documents.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered with the analyses. All sample MDA's were less than the RDL.

2.2 Isotopic Uranium Analyses

No problems were encountered with the analyses. All sample MDA's were less than the RDL.

2.3 Isotopic Plutonium Analyses

No problems were encountered with the analyses. All sample MDA's were less than the RDL.

2.4 Americium-241 Analyses

No problems were encountered with the analyses. All sample MDA's were less than the RDL.

2.5 Gamma Scan Analyses

No problems were encountered with the analyses. All sample MDA's were less than the RDL.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

SDG 7486
Contact N. Joseph Verville

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

SAMPLE SUMMARY

SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0NCD1	105-C	LIQUID		N808012-01	B98-063	B98-063-05	08/03/98 16:10
Method Blank		LIQUID		N808012-03	B98-063		
Lab Control Sample		LIQUID		N808012-02	B98-063		
Duplicate (N808012-01)	105-C	LIQUID		N808012-04	B98-063		08/03/98 16:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

QC SUMMARY

SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS RECEIVED	DAYS COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7486	B98-063-05	B0NCD1	LIQUID				08/05/98	2	N808012-01	7486-001
		Method Blank	LIQUID						N808012-03	7486-003
		Lab Control Sample	LIQUID						N808012-02	7486-002
		Duplicate (N808012-01	LIQUID				08/05/98	2	N808012-04	7486-004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

PREP BATCH SUMMARY

SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	LIQUID	Americium 241 in Water	2785-103	5.0	1			1	1	1/1		
PU	LIQUID	Plutonium, Isotopic in Water	2785-103	5.0	1			1	1	1/1		
U	LIQUID	Uranium, Isotopic in Water	2785-103	5.0	1			1	1	1/1		
Beta Counting												
SR	LIQUID	Strontium, Total in Water	2785-103	10.0	1			1	1	1/1		
Gamma Scan												
GAM	LIQUID	Gamma Emitters	2785-103	15.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

WORK SUMMARY

SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUFFIX	ANALYZED	REVIEWED	BY	METHOD
B0NCD1			N808012-01	7486-001	AM		08/25/98	08/27/98	NJV	Americium 241 in Water
105-C		LIQUID	08/03/98	7486-001	GAM		08/11/98	08/27/98	NJV	Gamma Emitters
B98-063-05	B98-063		08/05/98	7486-001	PU		08/19/98	08/27/98	NJV	Plutonium, Isotopic in Water
				7486-001	SR		08/13/98	08/27/98	NJV	Strontium, Total in Water
				7486-001	U		08/13/98	08/27/98	NJV	Uranium, Isotopic in Water
Method Blank			N808012-03	7486-003	AM		08/25/98	08/27/98	NJV	Americium 241 in Water
		LIQUID		7486-003	GAM		08/11/98	08/27/98	NJV	Gamma Emitters
	B98-063			7486-003	PU		08/19/98	08/27/98	NJV	Plutonium, Isotopic in Water
				7486-003	SR		08/13/98	08/27/98	NJV	Strontium, Total in Water
				7486-003	U		08/13/98	08/27/98	NJV	Uranium, Isotopic in Water
Lab Control Sample			N808012-02	7486-002	AM		08/25/98	08/27/98	NJV	Americium 241 in Water
		LIQUID		7486-002	GAM		08/11/98	08/27/98	NJV	Gamma Emitters
	B98-063			7486-002	PU		08/19/98	08/27/98	NJV	Plutonium, Isotopic in Water
				7486-002	SR		08/13/98	08/27/98	NJV	Strontium, Total in Water
				7486-002	U		08/13/98	08/27/98	NJV	Uranium, Isotopic in Water
Duplicate (N808012-01)			N808012-04	7486-004	AM		08/26/98	08/27/98	NJV	Americium 241 in Water
105-C		LIQUID	08/03/98	7486-004	GAM		08/12/98	08/27/98	NJV	Gamma Emitters
	B98-063		08/05/98	7486-004	PU		08/19/98	08/27/98	NJV	Plutonium, Isotopic in Water
				7486-004	SR		08/13/98	08/27/98	NJV	Strontium, Total in Water
				7486-004	U		08/13/98	08/27/98	NJV	Uranium, Isotopic in Water

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B98-063	Americium 241 in Water	AM/CMPLATE	1			1	1	1	4
GAM	B98-063	Gamma Emitters	GAMMAHI	1			1	1	1	4
PU	B98-063	Plutonium, Isotopic in Water	PUPLATE	1			1	1	1	4
SR	B98-063	Strontium, Total in Water	SR8990	1			1	1	1	4
U	B98-063	Uranium, Isotopic in Water	UPLATE	1			1	1	1	4
TOTALS				5			5	5	5	20

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/27/98

N808012-03

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

METHOD BLANK

Method Blank

SDG 7486 Client/Case no Hanford SDG H0186
Contact N. Joseph Verville Case no TRB-SBB-207925

Lab sample id N808012-03 Client sample id Method Blank
Dept sample id 7486-003 Material/Matrix LIQUID
SAF No B98-063

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALIFIERS	TEST
Uranium 233/234	U-233/234	0	0.005	0.021	1.0	U	U
Uranium 235	15117-96-1	0	0.007	0.025	1.0	U	U
Uranium 238	U-238	0	0.005	0.021	1.0	U	U
Plutonium 238	13981-16-3	0.003	0.006	0.022	1.0	U	PU
Plutonium 239/240	15117-48-3	-0.003	0.006	0.022	1.0	U	PU
Americium 241	14596-10-2	0.007	0.011	0.019		U	AM
Total Strontium	SR-89/90	-0.022	0.15	0.21	2.0	U	SR
GAMMA SCAN ANALYTES		U					
Potassium 40	13966-00-2	U		230		U	GAM
Cobalt 60	10198-40-0	U		16	25	U	GAM
Cesium 137	10045-97-3	U		13	15	U	GAM
Europium 152	14683-23-9	U		35	50	U	GAM
Europium 154	15585-10-1	U		40	50	U	GAM
Europium 155	14391-16-3	U		34	50	U	GAM

QC-BLANK 28822

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 08/27/98

N808012-02

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

LAB CONTROL SAMPLE

Lab Control Sample

SDG 7486
Contact N. Joseph Verville

Client/Case no Hanford SDG H0186
Case no TRB-SBB-207925

Lab sample id N808012-02
Dept sample id 7486-002

Client sample id Lab Control Sample
Material/Matrix LIQUID
SAF No B98-063

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Uranium 233/234	5.1	0.33	0.15	1.0		U	5.14	0.21	99	86-114	80-120
Uranium 235	4.1	0.28	0.022	1.0		U	4.20	0.17	98	86-114	80-120
Uranium 238	5.4	0.34	0.14	1.0		U	5.29	0.21	102	86-114	80-120
Plutonium 238	5.7	0.53	0.023	1.0		PU	5.69	0.23	100	83-117	80-120
Plutonium 239/240	5.6	0.52	0.028	1.0		PU	5.29	0.21	106	82-118	80-120
Americium 241	5.2	0.30	0.016			AM	5.28	0.21	98	87-113	
Total Strontium	9.4	0.67	0.36	2.0		SR	9.89	0.40	95	81-119	
GAMMA SCAN ANALYTES	U										
Cobalt 60	650	49	23	25		GAM	584	23	111	71-129	80-120
Cesium 137	520	39	30	15		GAM	450	18	116	70-130	80-120

QC-LCS 28821

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 08/27/98

N808012-04

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

DUPLICATE

B0NCD1

SDG 7486
Contact N. Joseph Verville

DUPLICATE
Lab sample id N808012-04
Dept sample id 7486-004

ORIGINAL
Lab sample id N808012-01
Dept sample id 7486-001
Received 08/05/98

Client/Case no Hanford SDG H0186
Case no TRB-SBB-207925
Client sample id B0NCD1
Location/Matrix 105-C LIQUID
Collected 08/03/98 16:10
Custody/SAF No B98-063-05 B98-063

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Uranium 233/234	0.016	0.021	0.041	1.0	U	U	0.005	0.010	0.038	U	-	
Uranium 235	0.006	0.013	0.049	1.0	U	U	0	0.012	0.046	U	-	
Uranium 238	0	0.011	0.041	1.0	U	U	0	0.010	0.038	U	-	
Plutonium 238	-0.003	0.006	0.021	1.0	U	PU	-0.004	0.009	0.034	U	-	
Plutonium 239/240	0	0.006	0.021	1.0	U	PU	-0.004	0.009	0.034	U	-	
Americium 241	0.030	0.021	0.024			AM	0.016	0.012	0.015		61	158
Total Strontium	-0.064	0.36	0.46	2.0	U	SR	0.063	0.30	0.41	U	-	
GAMMA SCAN ANALYTES	U						U					
Potassium 40	U		78		U	GAM	U		78	U	-	
Cobalt 60	U		5.8	25	U	GAM	U		6.1	U	-	
Cesium 137	U		5.3	15	U	GAM	U		5.1	U	-	
Europium 152	U		17	50	U	GAM	U		15	U	-	
Europium 154	U		18	50	U	GAM	U		20	U	-	
Europium 155	U		12	50	U	GAM	U		12	U	-	

QC-DUP#1 28823

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/27/98

N808012-01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

DATA SHEET

B0NCD1

SDG 7486 Client/Case no Hanford SDG H0186
Contact N. Joseph Verville Case no TRB-SBB-207925

Lab sample id N808012-01 Client sample id B0NCD1
Dept sample id 7486-001 Location/Matrix 105-C LIQUID
Received 08/05/98 Collected 08/03/98 16:10
Custody/SAF No B98-063-05 B98-063

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.005	0.010	0.038	1.0	U	U
Uranium 235	15117-96-1	0	0.012	0.046	1.0	U	U
Uranium 238	U-238	0	0.010	0.038	1.0	U	U
Plutonium 238	13981-16-3	-0.004	0.009	0.034	1.0	U	PU
Plutonium 239/240	15117-48-3	-0.004	0.009	0.034	1.0	U	PU
Americium 241	14596-10-2	0.016	0.012	0.015			AM
Total Strontium	SR-89/90	0.063	0.30	0.41	2.0	U	SR
GAMMA SCAN ANALYTES		U					
Potassium 40	13966-00-2	U		78		U	GAM
Cobalt 60	10198-40-0	U		6.1	25	U	GAM
Cesium 137	10045-97-3	U		5.1	15	U	GAM
Europium 152	14683-23-9	U		15	50	U	GAM
Europium 154	15585-10-1	U		20	50	U	GAM
Europium 155	14391-16-3	U		12	50	U	GAM

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

METHOD SUMMARY

AMERICIUM 241 IN WATER

ALPHA SPECTROSCOPY

Test AM Matrix LIQUID
SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 2785-103					
B0NCD1	N808012-01			7486-001	0.016
BLK (QC ID=28822)	N808012-03			7486-003	U
LCS (QC ID=28821)	N808012-02			7486-002	ok
Duplicate (N808012-01)	N808012-04			7486-004	ok
Nominal values and limits from method				RDLs (pCi/L)	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-103	2σ prep error 5.0 %			Reference Lab	Notebook #2785 pg. 105											
B0NCD1	N808012-01			0.015	1.00			88		1087			22	08/21/98	08/25	SS-035
BLK (QC ID=28822)	N808012-03			0.019	1.00			78		1087				08/21/98	08/25	SS-038
LCS (QC ID=28821)	N808012-02			0.016	1.00			83		1087				08/21/98	08/25	SS-036
Duplicate (N808012-01) (QC ID=28823)	N808012-04			0.024	1.00			42		1255			23	08/21/98	08/26	SS-043
Nominal values and limits from method					1.00			20-105		700	100		180			

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-040	Environmental Water Dissolution, rev 1
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.018 ± 0.008
YIELD 73 ± 42

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Test PU Matrix LIQUID
SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 2785-103								
B0NCD1	N808012-01			7486-001	U		U	
BLK (QC ID=28822)	N808012-03			7486-003	U		U	
LCS (QC ID=28821)	N808012-02			7486-002	ok		ok	
Duplicate (N808012-01)	N808012-04			7486-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-103	2σ prep error 5.0 %			Reference Lab Notebook #2785 pg. 105												
B0NCD1	N808012-01			0.034	1.00			61		619			16	08/19/98	08/19	SS-052
BLK (QC ID=28822)	N808012-03			0.022	1.00			65		619				08/19/98	08/19	SS-062
LCS (QC ID=28821)	N808012-02			0.028	1.00			63		619				08/19/98	08/19	SS-058
Duplicate (N808012-01) (QC ID=28823)	N808012-04			0.021	1.00			67		619			16	08/19/98	08/19	SS-066
Nominal values and limits from method				1.0	1.00			20-105		700	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-040	Environmental Water Dissolution, rev 1
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.026 ± 0.012
YIELD 64 ± 5

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Test U Matrix LIQUID
SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 2785-103											
B0NCD1	N808012-01			7486-001	U	U	U				
BLK (QC ID=28822)	N808012-03			7486-003	U	U	U				
LCS (QC ID=28821)	N808012-02			7486-002	ok	ok	ok				
Duplicate (N808012-01)	N808012-04			7486-004	- U	- U	- U				
Nominal values and limits from method				RDLs (pCi/L)	1.0	1.0	1.0	100		4	
							Averages				

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-103 2σ prep error 5.0 % Reference Lab Notebook #2785 pg. 105																
B0NCD1	N808012-01			0.046	0.500			89		525			10	08/13/98	08/13	SS-035
BLK (QC ID=28822)	N808012-03			0.025	1.00			84		525				08/13/98	08/13	SS-037
LCS (QC ID=28821)	N808012-02			0.15	1.00			94		525				08/13/98	08/13	SS-036
Duplicate (N808012-01) (QC ID=28823)	N808012-04			0.049	0.500			86		525			10	08/13/98	08/13	SS-038
Nominal values and limits from method				1.0	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
	EP-040	Environmental Water Dissolution, rev 1
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.068 ± 0.11
YIELD 88 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

METHOD SUMMARY

STRONTIUM, TOTAL IN WATER

BETA COUNTING

Test SR Matrix LIQUID
SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 2785-103					
B0NCD1	N808012-01			7486-001	U
BLK (QC ID=28822)	N808012-03			7486-003	U
LCS (QC ID=28821)	N808012-02			7486-002	ok
Duplicate (N808012-01)	N808012-04			7486-004	- U
Nominal values and limits from method				RDLs (pCi/L)	2.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-103	**2σ prep error 10.0 %**			**Reference Lab Notebook #2785 pg. 105**												
B0NCD1	N808012-01			0.41	0.500			79		400			10	08/13/98	08/13	GRB-205
BLK (QC ID=28822)	N808012-03			0.21	1.00			80		400				08/13/98	08/13	GRB-207
LCS (QC ID=28821)	N808012-02			0.36	1.00			78		400				08/13/98	08/13	GRB-206
Duplicate (N808012-01) (QC ID=28823)	N808012-04			0.46	0.500			78		400			10	08/13/98	08/13	GRB-208
Nominal values and limits from method				2.0	1.00					100			180			

PROCEDURES	REFERENCE	SR8990
	EP-040	Environmental Water Dissolution, rev 1
	EP-500	Strontium-89,90 - Purification, rev 0
	EP-519	Strontium-89,90 Planchet Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.36 ± 0.22
YIELD 79 ± 2

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/27/98

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

Test GAM Matrix LIQUID
SDG 7486
Contact N. Joseph Verville

METHOD SUMMARY

GAMMA EMITTERS
GAMMA SCAN

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 2785-103								
B0NCD1	N808012-01			7486-001	U		U	
BLK (QC ID=28822)	N808012-03			7486-003	U		U	
LCS (QC ID=28821)	N808012-02			7486-002	ok		ok	
Duplicate (N808012-01)	N808012-04			7486-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	25		15	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 2785-103	2σ prep error 15.0 %			Reference Lab	Notebook #2785 pg. 105											
B0NCD1	N808012-01			5.1	0.500					516			8	08/11/98	08/11	01,04,00
BLK (QC ID=28822)	N808012-03			13	0.500					455				08/11/98	08/11	01,03,00
LCS (QC ID=28821)	N808012-02			30	0.500					455				08/11/98	08/11	01,01,00
Duplicate (N808012-01) (QC ID=28823)	N808012-04			5.3	0.500					505			9	08/11/98	08/12	01,04,00
Nominal values and limits from method				15	0.500					400			180			

PROCEDURES REFERENCE GAMMAHI
EP-100 Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 13 ± 23
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0186

SDG 7486
Contact N. Joseph Verville

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG_H0186

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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SDG 7486
Contact N. Joseph Verville

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG_H0186

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG 7486
Contact N. Joseph Verville

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

SDG 7486
Contact N. Joseph Verville

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0186

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 08/27/98

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B98-063-05	Page 1 of 2

Collector Fahlberg/Nielson	**Company Contact** Steve Marske	**Telephone No.** 373-4316	**Project Coordinator** WEISS, RL	**Data Turnaround** 21 Days
Project Designation 105-C Phase I & Phase II - Water Samples	**Sampling Location** 105-C		**SAF No.** B98-063	
Ice Chest No.	**Field Logbook No.** EL-1309-1		**Method of Shipment** Federal Express	
Shipped To ~~Quanterra Incorporated~~ RJN 8/4/98 ThermoNUTech Richmond Laboratory	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	
Waste Designation			**COA**	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	HNO3 to pH <2	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2
	Type of Container	P	aG	P	P	P	P	aG	P	P	P
	No. of Container(s)	1 ✓	1	1 ✓	1	1	1 ✓	2	~~1~~ 3 RJN 8/4/98	2 ✓	3
Special Handling and/or Storage Cool 4C	Volume	20ml	500ml	500ml	500ml	1000ml	1000ml	1000ml	1000ml	1000ml	500ml
SAMPLE ANALYSIS		Activity Scan	Mercury - 7470 - (CV)	Chromium Hex - 7196	ICP Metals - 6010A (Supertrace) (Lead)	See item (1) in Special Instructions	Nickel-63	PCBs - 8080 (Aroclor-1254)	See item (2) in Special Instructions	Isotopic Plutonium, Isotopic Uranium, Americium-241	Selenium-79

Sample No.	Matrix *	Sample Date	Sample Time								
B0NCD1	Water	8-3-98	1610	X					X		X	X	X

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
K Nielsen R Nielson 8/4/98	1320	Fed Ex	
Relinquished By	Date/Time	Received By	Date/Time
		C-SANGALANG	8/5/98 1000
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)~~ RJN 8/4/98

(2) Gamma Spectroscopy(Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

DO Not run Nickel-63, Carbon-14, or Technetium-99 unless instructed by ERC Sample Management. Also DO not run Selenium-79 unless directed by ERC Sample Management.

Matrix *

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B98-063-05	Page 2 of 2

Collector Fahlberg/Nielson	**Company Contact** Steve Marske	**Telephone No.** 373-4316	**Project Coordinator** WEISS. RL	**Data Turnaround** 21 Days
Project Designation 105-C Phase I & Phase II - Water Samples	**Sampling Location** 105-C		**SAF No.** B98-063	
Ice Chest No.	**Field Logbook No.** EL-1309-1		**Method of Shipment** Federal Express	
Shipped To ~~Quanterra Incorporated~~ RLN 9/4/98 Thermo Nutech Richmond Laboratory	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	
Waste Designation			**COA**	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	HCl to pH <2	HNO3 to pH <2								
	Type of Container	P	P	P								
	No. of Container(s)	3 ✓	3 ✓	3 ✓								
Special Handling and/or Storage Cool 4C	**Volume**	500ml	1000ml	1000ml								
SAMPLE ANALYSIS		Carbon-14	Technetium-99	Strontium-89,90 -- Total Sr								

Sample No.	Matrix *	Sample Date	Sample Time									
B0NCD1	Water	8-3-98	1610	X	X	X					BOP 2Y2	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	Renee Nielsen R Nielson	8/4/98 1320
Received By	FedEx	
Relinquished By		
Received By	C. SANGALANG	8/5/98 1000
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

Do not run Nickel-63, Carbon-14, or Technetium-99 unless instructed by ERC Sample Management. Also do not run Selenium-79 unless directed by ERC Sample Management.

Matrix *

S	= Soil
SE	= Sediment
SO	= Solid
SL	= Sludge
W	= Water
O	= Oil
A	= Air
DS	= Drum Solids
DL	= Drum Liquids
T	= Tissue
WI	= Wipe
L	= Liquid
V	= Vegetation
X	= Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 8/5/98 / 1000 S.G.#: _____

Work Order Number: N8-08-11-12 SAF #: _____

Shipping Container ID: ERC 044 Chain of Custody # B98-063-05 p-1 & 2

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature _____
5. Vermiculite/packing materials is Wet [ ] Dry [ ]
6. Number of samples in shipping container: 1 (20 bottles (poly))
7. Sample holding times exceeded? Yes [ ] No [ ]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ____ hazard labels
   - ✓ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): There is a bottle for Chromium Hex-7196, but not requested for Analysis in the chain of custody. Ice chest is not packed w/ ice.

Sample Custodian/Laboratory: [illegible]/TNH Date: 8/5/98

Telephoned To: _____ On _____ By _____

Sample Disposition Record

Control #: B98-070
Revision#: 0
Date Initiated: 8/6/98

Section 1 - BACKGROUND

SAF#: B98-063
OU: N/A
Project ID: 105-C Reactor
Task ID: 9
Sampling Event: 105-C Phase I & Phase II
Laboratory: TMA/RECRA
Project Coordinator: WEISS, RL
Task Manager: ARMATROUT, JF

Section 2 - SAMPLE INFORMATION

Number of Samples: 1
ID Numbers: B0NCD1
MATRIX: Water
Collection Date:

Section 3 - ISSUE

Class: Lab Direction
NCR Number: N/A
Type: Revision of Direction - Cancellation of Analyses
Description: Inadvertent inclusion of addional analytes to COC

N/A
NCR Validation (Print/Sign) Date

Section 4 - DISPOSITION

Type: Use As Is
Description: Cancel analysis for CrVI, Ni-63, C-14, and Tc-99

WEISS, RL Richard L Weiss 8/6/98
Project Coordinator (Print/Sign) Date

ARMATROUT, JF
Task Manager (Print/Sign) Date

N/A
QA (Print/Sign) Date

Section 5 - INSPECTION (Issue Class: Nonconformance Only)

Inspection Number: N/A
Inspection Results: N/A

N/A
Inspector (Print/Sign) Date

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B98-063
RFW# : 9808L205
SDG/SAF# : H0186/B98-063

W.O.# : 10985-001-001-9999-00
Date Received: 08-05-98

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits.

7. All preparation/method blanks were within method criteria. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) and matrix spike duplicate (MSD) recoveries for Lead were within the 75-125% control limits. Matrix QC could not be reported for Mercury. QC had been prepped, however, the rack of tubes with the replicate and spike was dropped and the tubes containing these samples broke. At this point, sample volume had been depleted. Refer to the Inorganics Accuracy Report.

11. The MSs and MSDs for Lead were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.

12. The duplicate analyses for Lead was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-29-98
Date

mld/m08-205

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9905705

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: X 3005A __3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	__6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	__6010B	__200.7			__99
Beryllium	__6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	__6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	__6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	__6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	X 6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	X 7470A [3] __7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	__6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	__6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	__6010B __7761 [5]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	__6010B	__200.7			__99
Zinc	__6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/29/98

CLIENT: TNU-HANFORD B98-063 RECRA LOT #: 9808L205

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BONCD1	Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	4.8	UG/L	1.9	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/29/98

CLIENT: TNU-HANFORD B98-063

RECRA LOT #: 9806L205

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	98C0408-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK1	98L1125-MB1	Lead, Total	1.9 u	UG/L	1.9	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/29/98

CLIENT: TNU-HANFORD B98-063 RECRA LOT #: 9808L205

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	BONCD1	Lead, Total	502	4.8	500	99.3	1.0
		Lead, Total MSD	489	4.8	500	96.9	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 09/29/98

CLIENT: TNU-HANFORD B98-063 RECRA LOT #: 9808L205

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	BONCD1	Lead, Total	99.3	96.9	2.5

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 09/29/98

CLIENT: TNU-HANFORD B98-063 RECRA LOT #: 9808L205

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	BONCD1	Lead, Total	4.8	2.4	66.7	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/29/98

CLIENT: TNU-HANFORD B98-063 RECRA LOT #: 9808L205

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	98C0408-LC1	Mercury, LCS	5.4	5.0	UG/L	108.2
LCS1	98L1125-LC1	Lead, LCS	2490	2500	UG/L	99.7

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-063

DATE RECEIVED: 08/05/98 RFW LOT # :9808L205

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BONCD1						
MERCURY, TOTAL	001	W	98C0408	08/03/98	08/21/98	08/24/98
LEAD, TOTAL	001	W	98L1125	08/03/98	08/17/98	08/20/98
LEAD, TOTAL	001 REP	W	98L1125	08/03/98	08/17/98	08/20/98
LEAD, TOTAL	001 MS	W	98L1125	08/03/98	08/17/98	08/20/98
LEAD, TOTAL	001 MSD	W	98L1125	08/03/98	08/17/98	08/20/98
LAB QC:						
MERCURY LABORATORY	LC1 BS	W	98C0408	N/A	08/21/98	08/24/98
MERCURY, TOTAL	MB1	W	98C0408	N/A	08/21/98	08/24/98
LEAD LABORATORY	LC1 BS	W	98L1125	N/A	08/17/98	08/20/98
LEAD, TOTAL	MB1	W	98L1125	N/A	08/17/98	08/20/98

RECRA LabNet Use Only
9808G205

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B98-063
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: MS
QC: SPEC Del: STD TAT: 21 day
Date Rec'd: 8/5/98 Date Due: 8/26/98
Account #:

	VOA	BNA	Pest/PCB	Herb					Metal	CN						
Refrigerator #			3						3							
#/Type Container – Liquid			4						1P							
#/Type Container – Solid			2g													
Volume – Liquid			Ltr						500							
Volume – Solid																
Preservatives									HNO3							

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected			OPCB					ICR6	MET①							
001	BØNCD1			W	8/3/98	1610			✓					✓	✓							

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Special Instructions:
SAF# B98-063
RSA - Client info
RMSC - Comp

DATE/REVISIONS:
1 MET ① = Pb, Hg (Pb by trace)
2 ICR6 on hold. !
3 Run Matrix QC
4
5
6 * 423579515429

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5.?

Relinquished by	Received by	Date	Time
Deeley	Fowler	8/5/98	0930

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES
Cr(6) not here

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B98-063-05	Page 1 of ~~2~~ 1 RJN 8/4/98

Collector Fahlberg/Nielson	**Company Contact** Steve Marske	**Telephone No.** 373-4316	**Project Coordinator** WEISS, RL
Project Designation 105-C Phase I & Phase II - Water Samples	**Sampling Location** 105-C		**SAF No.** B98-063
Data Turnaround	**21 Days**		
Ice Chest No.	**Field Logbook No.** EL-1309-1		**Method of Shipment** Federal Express
Shipped To ~~Quanterra Incorporated~~ RJN 8/4/98 REZRA LabNet	**Offsite Property No.**		**Bill of Lading/Air Bill No.**
Waste Designation			**COA**

POSSIBLE SAMPLE HAZARDS/REMARKS

4235 7951 5429 SX

Special Handling and/or Storage
Cool 4C

	Activity Scan	Mercury - 7470 - (CV)	Chromium Hex - 7196	ICP Metals - 6010A (Supertrace) (Lead)	See item (1) in Special Instructions	Nickel-63	PCBs - 8080 {Aroclor-1254}	See item (2) in Special Instructions	Isotopic Plutonium Isotopic Uranium Americium 241	Selenium-79
Preservation	None	HNO3 to pH <2	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2	Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH 2
Type of Container	P	aG	P	P	P	P	aG	P	P	P
No. of Container(s)	1	1	1	1	1	1	2	2	2	3
Volume	20ml	500ml	500ml	500ml	1000ml	1000ml	1000ml	1000ml	1000ml	500ml

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Mercury - 7470 - (CV)	Chromium Hex - 7196	ICP Metals - 6010A (Supertrace) (Lead)	See item (1)	Nickel-63	PCBs - 8080 {Aroclor-1254}	See item (2)	Isotopic Plutonium Isotopic Uranium Americium 241	Selenium-79
B0NCD1	Water	8-3-98	1610		X	X	X			X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible signature], F Nielsen	8/4/98 1300	Fed Ex	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}
(2) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Do not run Chromium-Hex 7196 unless directed by EEC Sample management.

Matrix *

S	Soil
SE	Sediment
SO	Solid
SL	Sludge
W	Water
O	Oil
A	Air
DS	Drum Solids
DL	Drum Liquids
T	Tissue
WI	Wipe
L	Liquid
V	Vegetation
X	Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time